Background section of the current application, allows a single spreading, or PRN, code on each of the in-phase and quadrature carriers. See, Hein page 275, and Figure 9.

The AltBOC modulation involves complex subcarrier modulation. The AltBOC modulation with a single complex subcarrier shifts the signal to an upper sideband. See, Hein pages 275-276, and Figure 10. The AltBOC **composite** signal described in the current application consists of E5a and E5b components that are modulated by respective complex subcarriers, such that the E5a signal is shifted to an upper sideband of the composite signal and the E5b signal is shifted to a lower sideband of the composite signal. The respective in-phase and quadrature carriers of the composite signal are thus each modulated by two complex spreading, or PRN, codes. Accordingly, the in-phase and quadrature channels of the AltBOC composite code each include contributions from both real and imaginary signal components of the E5a and the E5b codes.

The current system includes a local **composite** code generator that produces a local version of the AltBOC composite code as combinations of locally produced real and imaginary code components, as set forth in each of the independent claims. In contrast, the Betz, Martin and Ganguly references describe receivers that operate with standard BOC codes, i.e., single spreading codes, that by definition have only real code components.

More specifically, the Betz published application describes a receiver that treats the upper and lower sidebands of the standard BOC signal as two independent signals that have identical spreading or PRN codes. See, paragraphs 0015-0016. A code generator 214 operates in a conventional manner to generate a local version of the spreading code, referred to as a "PN" code. See, paragraphs 0042, 0044.

The Martin published application describes a receiver that removes the square subcarrier from a received standard BOC signal using in-phase (S_i) and quadrature (S_q) components of the subcarrier signal. The receiver uses a standard code generator to generate local advance (early) and lag (late) versions of the spreading or PRN code on the in-phase channel of the BOC signal. See, paragraph 0025.

The Ganguly reference similarly describes a receiver that uses a standard code generator to produce local early, punctual and late versions of the BOC spreading code.

All of the receivers described in the cited references use standard local code generators to produce the respective BOC spreading codes, i.e., single PRN codes, that by definition have only real code components. The Hein reference describes the signal structure of an AltBOC signal, but does not discuss a receiver that operates with the AltBOC signal and, in particular, with an AltBOC **composite** signal, which has contributions of two complex PRN codes in the composite code that is, for example, on the in-phase channel of the AltBOC composite code . A combination of the teachings of Hein and Bertz, Merlin or Ganguly does not teach or suggest modification of the Bertz, Merlin and/or Ganguly receivers to operate with the AltBOC signals described in the Hein reference. Specifically, the combination does not teach the local generation of a **composite** code with both real and imaginary components from each of the constituent codes, and/or the determining of pseudoranges based on the timing differences between the transmission and reception of the composite codes.

Accordingly, the combination does not teach or suggest the current invention because, *inter alia*, the combination does not teach or suggest a receiver that includes a local composite code generator that produces a local version of an AltBOC composite code as combinations of locally produced real and imaginary code components, as set forth in independent claims 1, 4 and 8 and the claims that depend therefrom. Further, the combination does not teach or suggest a receiver that determines pseudoranges based on the timing differences between the transmission and reception of the composite codes, as set forth in independent claims 1 and 8 and the claims that depend therefrom. Also, the combination does not teach or suggest a local composite code generator that produces two spreading codes, and combines the codes to produce locally generated inphase and/or quadrature channel composite spreading codes that include the contributions of the real and imaginary components of the two spreading codes, as set forth in independent claim 4 and the claims that depend therefrom.

In light of the above, we respectfully request that the Examiner reconsider his rejections and issue a Notice of Allowance for the pending claims.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

Patricia A. Sheehan
Reg. No. 32,301
CESARI AND MCKENNA, LLP
88 Black Falcon Avenue
Boston, MA 02210-2414
(617) 951-2500